

## ServSwitch Fiber Optic KVM Extenders

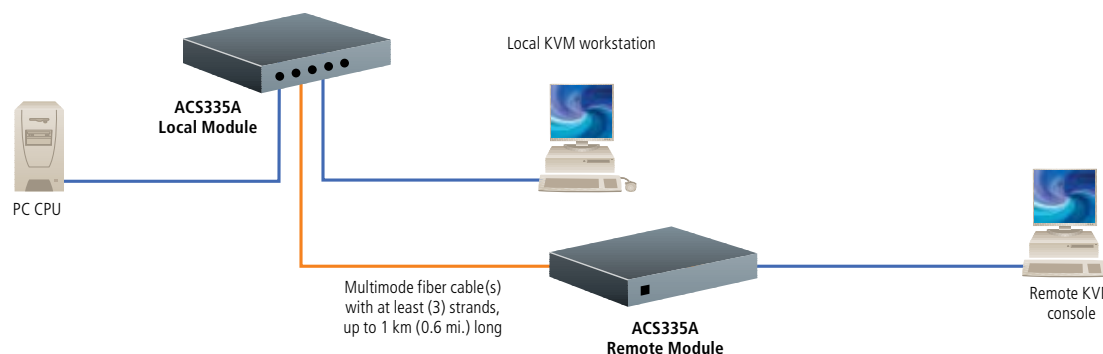
**Control a CPU from  
as much as 1 kilometer  
away across safe, secure  
fiber optic cable!**



## FEATURES

- » Fiber optic KVM extension for IBM compatible PC CPUs.
- » Drive keyboard, video, and mouse signals over multimode fiber cable as far as 0.6 miles (1 km).
- » Support a variety of video types at up to 1280 x 1024 resolution.
- » Include both local and remote units.
- » Dual access. Use your computer at either location!
- » A serial RS-232 and bidirectional stereo audio version is also available.
- » Fiber optic cable makes them perfect for industrial settings and environments with high EMI/RFI.
- » Fiber signals are also immune to lightning strikes and power surges.
- » Work with 50- or 62.5-micron multimode cable with ST® connectors.
- » Status LEDs and the remote unit's seven-segment diagnostic display make troubleshooting easy.
- » Intelligent PS/2 keyboard and mouse emulation prevents PC lockup.

Use these extenders to control a remote CPU—even one that's a kilometer away!



## OVERVIEW

Sure you can use copper KVM extenders to access and control a CPU from the next room or the next building. But what if you need to work with a CPU a half mile away, or if you need more security, or if you have to run cable right past a generator?

You need [ServSwitch™ Fiber Optic KVM Extenders](#). They greatly extend the distance between a computer CPU and a keyboard, mouse, and monitor—especially in electrically noisy environments.

Normal keyboard-, video-, and mouse-extension cables—and the extenders that use them—can only go so far, and electromagnetic noise can limit their distance and reliability.

But with a fiber optic solution like the [ServSwitch Fiber Optic KVM Extender](#), these concerns are a thing of the past. You can leave a CPU in a secured cabinet or data center while you operate it from a convenient remote user station.

Using at least three multimode fiber strands, the extender system can reach as far as 0.6 miles (1 km) on either 62.5- $\mu$ m or 50- $\mu$ m fiber. Fiber extension technology ensures perfect monitor image quality—even at the farthest possible distances supported!

Each [ServSwitch Fiber Optic KVM Extender](#) kit consists of two main components: a local module that you attach to an IBM® PC compatible CPU and a remote unit that you attach to the remote keyboard, monitor, and mouse console. We even offer a version for connecting stereo audio and serial devices, such as touch screens, to your KVM fiber optic extender setup.

And because the extenders support dual access, you can add a KVM console on the local end, too. That enables you to operate the PC from either the local or remote user station.

Or, if you prefer, you can use the local KVM ports to feed into a BLACK BOX® KVM switch.

The [ServSwitch Fiber Optic KVM Extenders](#) are compatible with all standard keyboards and all standard 2-button, 3-button, and wheel mice. Intelligent PS/2 keyboard and mouse emulation ensures that your PCs don't lock up.

Locating a CPU away from your workstation has a number of advantages. For instance:

- In industrial applications, you can protect delicate server circuitry against dust, debris, moisture, and equipment vibration and keep data communications safe from potential interference (emitting from induction furnaces or current or load generators, for example).
- In environments where data security is the highest priority, you can protect against data theft and unauthorized installation of software.
- It also simplifies the setup, maintenance, configuration and administration of server management workstations.

In addition to industrial applications, [ServSwitch Fiber Optic KVM Extenders](#) can be deployed in:

- Call centers where you need to co-locate a number of user's computers.
- Retail or similar settings where you need to keep CPUs secure and apart from monitors in kiosks and digital signage displays, as well as user stations in publically accessible areas.
- Any application where you require remote access control of mission-critical servers and the cable connecting local and remote stations must be reliable and offer a high level of security.

No matter what their application, our compact KVM extenders feature an unobtrusive footprint, so you can set them up for operation in tight work spaces or data centers.

## Technically Speaking

The ServSwitch Fiber Optic KVM Extenders' keyboard and mouse interfaces are standard PS/2® type interfaces, so you can attach just about any standard PS/2 compatible keyboard and mouse to the unit. To attach a PC/AT® style keyboard with a 5-pin DIN connector to the extender, you'll need a keyboard adapter (to order, call our FREE Tech Support).

The extenders come with zip-style cable for making VGA connections to your server; the audio/serial model comes with serial and audio CPU cables, too.

For monitoring operation, the remote module has a seven-segment display that continuously indicates link status. In addition, Device Ready LEDs on both local and remote units inform you of their operational status, so you can troubleshoot at either end.

The ServSwitch Fiber Optic KVM Extenders support all VGA graphics cards and VGA resolutions up to 1280 x 1024 @ 75 Hz. You can use them to transfer RGB as well as VGA (RGBVH) signals and, if necessary, convert signals to transfer RGB to VGA or from VGA to RGB. All you have to do is make a simple jumper adjustment on the extenders' motherboards.

There's no need to worry about the video getting horribly distorted at either end of the fiber optic link. By default, the KVM extenders operate with an automatic gain control (AGC) function enabled. With AGC enabled, the gain of each color signal is fixed to give colors the same white level (0.7 Vpp), and most video problems are cleaned up automatically.

In some applications, it may be necessary to switch off the AGC so you can optimize video (to remedy a chromatic aberration, for instance). For this, you just need to flip internal jumpers and tweak the manual brightness and contrast potentiometer dials on the rear panel of each unit. You can also attenuate the optic budget to raise the optical loss to a value that corrects any unstable image. (To do this, you need fiber pigtail coupling connectors. For details, call our FREE Tech Support.)

The seven-segment display aids with troubleshooting video gain. For instance, if it shows an "F," you've adjusted the contrast on the unit too high and, with AGC no longer possible, you need to readjust the gain.

### **Extend serial data and stereo audio, too.**

To add RS-232 serial and audio extension capabilities to your KVM-over-fiber extender application, order the ACS335A-AS version of the ServSwitch Fiber Optic KVM Extender. The circuit boards on its local and remote units support transmitting bidirectional stereo audio and full-duplex 19-kbps serial data across the interconnecting fiber cable.

The serial ports on the ACS335A-AS support extending TX, RX, RTS, CTS, DTR, and DSR serial signals (and, in some cases, RI and DCD signals, for which a wiring adapter may be required.) You can connect either one serial device requiring hardware handshaking or—using breakout cable—up to three simple 2-wire serial devices (TX/RX only). No user adjustments are required for the serial connection.

For multimedia capability, connect a set of speakers or a headset or microphone to a workstation linked to the remote unit. The extenders transmit stereo audio bidirectionally and simultaneously across the fiber cable link. The extender local unit sends audio digitally (as part of a 16-bit, 38.4-KHz signal) for near-CD sound quality at the remote end of the fiber interconnection.

The line-level interface is designed to receive output from a sound card or other line-level source and connect to a set of powered speakers at the remote console. No further setup is required unless a microphone is connected to the remote unit (in which case, you just need to ensure that your sound card is set up and wired to provide sufficient amplification).



ACS335A-AS

## Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognize any of these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by *Data Communications* magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application. Don't waste time and money—call Black Box today.

### What's included

#### For both ACS335A and ACS335A-AS versions:

- ◆ Local unit
  - ◆ Remote unit
  - ◆ Zip-style VGA CPU cable, 6-ft. (1.8-m), with HD15 male/female and (2) 6-pin mini-DIN male/male
  - ◆ (2) power supplies and cords
  - ◆ User's manual
- #### ACS335A-AS also includes:
- ◆ Serial CPU cable, 6-ft. (1.8-m), DB9 female/DB9 male
  - ◆ Audio CPU cable, 6-ft. (1.8-m), stereo jack/3.5-mm stereo jack

### TECH SPECS

**Cable Required** — 62.5/125- $\mu$ m or 50/125- $\mu$ m multimode fiber optic cable with at least (3) or (5) strands and terminated with ST connectors

**Optical Budget Total (Typical)** — -5 dBm

**Optical Center Wavelength** — 850 nm

**Resolution (Maximum)** — 1280 x 1024 @ 75 Hz

**Video Compatibility** — RGBHV with 0.7-Vpp RGB signals plus TTL 5-V horizontal/vertical synchronization signals; RGB with 0.7-Vpp RGB signals with the G signal carrying (composite) synchronization signals

**CE Approval** — Yes

**Connectors** — Local unit: Keyboard and mouse: (4) 6-pin mini-DIN F; Monitor: (1) HD15 M, (1) HD15 F; Interconnect: ACS335A: (3) ST; ACS335A-AS: (5) ST; ACS335A-AS local unit also includes: Audio: (2) 3.5-mm jacks; Serial: (1) DB9 F (RS-232); Remote unit: Keyboard and mouse: (2) 6-pin mini-DIN F; Monitor: (1) HD15 F; Interconnect: ACS335A: (3) ST; ACS335A-AS: (5) ST; ACS335A-AS remote unit also includes: Audio: (2) 3.5-mm jacks; Serial: (1) DB9 M (RS-232)

**Indicators** — (1) 7-segment display on remote unit; (1) Device Ready status LED on local and remote unit

**Temperature Tolerance** — Operating: 41 to 113°F (5 to 45°C); Storage: -13 to +140°F (-25 to +60°C)

**Humidity Tolerance** — Up to 80%, noncondensing

**Power** — 90–240 VAC, 47–63 Hz, autosensing, external, with IEC 320 connector and cord

**Size** — Each unit: 1.7"H x 7.1"W x 5.2"D (4.3 x 18 x 13.2 cm)

**Weight** — Each unit: 2.6 lb (1.2 kg)

Item	Code
ServSwitch Fiber Optic KVM Extender with Serial and Bidirectional Stereo Audio	<b>ACS335A</b> <b>ACS335A-AS</b>
<b>To connect an extender to the demarc, order...</b>	
ServSwitch Fiber Patch Cable, (5) Color-Coded 62.5/125- $\mu$ m Multimode Strands plus Spare, ST Male to Male	
For PC 1-m (3.2-ft.)	<b>EFN235-1</b>
5-m (16.4-ft.)	<b>EFN235-5</b>
<b>For indoor runs between extenders or demarcs, order...</b>	
Terminated Fiber Optic Breakout Cable, ST-ST Custom Lengths 6-Fiber	<b>EFN1006A-ST</b>
<b>For outdoor runs between demarcs, order...</b>	
Loose-Tube Multistrand 62.5 Multimode Fiber Cables Bulk (Unterminated), Custom	
6-Fiber	<b>EXN3006A</b>
12-Fiber	<b>EXN3012A</b>
Armored Loose-Tube Outside-Plant Fiber Cables, Bulk (Unterminated) for Extreme Conditions, 1000-ft. (304.8-m)	
6-Fiber	<b>EXN4070A-1000</b>
12-Fiber	<b>EXN4075A-1000</b>

*NOTE: Versions of these cables with other fiber counts are also available. For more information, see [blackbox.com](http://blackbox.com), or call our FREE Tech Support.*

#### You may also need...

19" Rackmount Kit for ACS335A or ACS335A-AS  
for 1 Extender  
for 2 Extenders

**RMK235**  
**RMK235-2**